## Ground-Nesting by Barn Owls

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While trapping small mammals on the Aransas National Wildlife Refuge in south Texas, I flushed some Common Barn-Owls (*Tyto alba*) from the ground in a dense stand of gulf cordgrass (*Spartina spartinae*). There were 3 separate tunnel-like pathways through the cordgrass which were apparently being used for roosting. Each cordgrass tunnel was about 1 m long, terminating in a small chamber beneath the grass. The floor of each chamber was littered with owl pellets and skulls of rodents and shrews. Between November 1980 and January 1981, owls were regularly observed using these cordgrass tunnels for roosting, and in January an abandoned clutch of 4 eggs was found in 1 concealed compartment. I suspected the nest was abandoned after having been flooded during a rainstorm (gulf cordgrass communities normally occur on areas that are periodically flooded). I could not find additional nests or roosts. The grass community had a dominant *Baccharis* shruf influence except for a small 3 ha shrub-free area in which the owl tunnels were located.

These observations are of interest because they provide additional evidence that Common Barn-Owls will nest and roost on the ground. Quigley (Condor 56:315, 1954) found young barn owls in a box with an open top, sunk flush with the surface of the ground in a marsh. It is possible, however, that owls resort to such areas for nesting and roosting only if there is no alternative. The nearest tree or man-made construction that could serve as a nest or roost site was located ovr 4 km away.

Raptor management has received increased attention in recent years. If particular management objectives for an area include enhancing the raptor populations, then attempts should be made to preserve roost and nest sites by not altering selected mature cordgrass stands. Erection of nest boxes (Marti et al., Wildl. Soc. Bull. 7:145-148, 1979) over cordgrass meadows may attract barn owls and support more successful nesting attempts than ground nests. Otteni et al. (Wilson Bull. 84:434-448, 1972) and Delnicki and Bolen (Southwest. Natural. 22:275-277, 1977) provide additional instances of Common Barn-Owl use of nest boxes in marsh areas.

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## Unusually Low Nesting Site For American Kestrels (*Falco sparverius*)

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Two American Kestrel (*Falco sparverius*) nests found in extreme northern Utah were located in small pine stumps on a steep canyon hillside. The nests were less than 45 m apart and both nest holes were only 64 cm above the ground. Higher and seemingly more suitable holes were common in nearby trees but were not occupied by nesting kestrels.

The low nest holes that were occupied did not appear to make the birds more sensitive to human disturbance. On one occasion, I was able to walk directly up to one of the nests and temporarily remove the incubating female before she made an attempt to fly.

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## Monitoring Bald Eagle Nesting in Baja California, Mexico

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Henney et al. (Auk 95:424, 1978) discussed Bald Eagle (*Haliaetus leucocephalus*) sightings and nesting activity in the vicinity of Bahia Magdalena in Baja California. They confirmed 2 nesting pairs in 1977, apparently the first published record of Bald Eagle nesting in Baja California during the last 50 years.

During an aerial survey of wintering waterfowl on 18 January 1983, the first and second authors found 3 nests (2 occupied) on Isla Creciente. Two were close together (one occupied) at the location (24°22′N, 111°39′W; hereafter abbreviated as 2422-11139) reported by Henny et al. (op.cit.) and an additional one occupied at 2422-11133 also on Isla Creciente. At the latter nest there was an adult eagle incubating 2 eggs with another adult perched nearby. One of the other 2 nests had an incubating adult, but we were unable to flush it off the nest. Assuming an incubation period of 35 days, the eggs seen would not have been laid before mid-December. All nests were made of sticks and located in the crowns of mangrove, but were readily visible from the air. The location of the other nesting pair found by Henney et al. (op.cit.) in 1977 (near San Jorge 2534-11206) was not checked in detail in 1983.

The west coast winter waterfowl survey was conducted by the U.S. Fish and Wildlife Service in cooperation with the Direccion General de la Fauna Silvestre of Mexico as part of the U.S.-Mexico Joint Agreement. Bald Eagle observations were made incidental to the waterfowl survey. We expect to fly annual winter surveys in this area in the future and plan to monitor the status of Bald Eagle nests at both general locations.

Addendum

The nests on Isla Creciente were checked again the following year on 16 January, 1984 during the 1984 Mexico winter waterfowl survey. An incubating adult was found in each of 2 nests (2422-11139 and 2422-11133) but we were unable to obtain an egg count. One flying adult was sighted near San Jorge (2534-11206) but the nest was not located.

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## The Seasonal Abundance, Habitat Use and Foraging BehaviorOf Wintering Bald Eagles *Haliaeetus leucocephalus*, in West-Central Illinois

The season abundance, habitat use and foraging behavior of bald eagles wintering near Lock and Dam 19, Mississippi River, were investigated by regular census taking and intensive behavioral sampling during the winters 1978-79 and 1979-1980. The ultimate objectives of the study were to provide information necessary for an Environmental Impact Analysis of a proposed Mississippi River bridge and highway corridor on wintering bald eagles and to obtain information useful to management of winter bald eagle habitat.

The two study seasons contrasted greatly in weather severity. During the severe winter of 1978-79, 8263 eagles were recorded on 59 censuses. The peak count for this season was 454 eagles on January 18. During the mild winter of 1979-80, 4230 eagles were recorded on 97 censuses. The peak count this season was 127 eagles on February 18. Eagle abundance varied considerably each season; the greatest numbers were recorded during the coldest periods of each winter. The effects of weather severity on the eagle population of the study area are discussed. Overall, adult eagle outnumbered immatures by 2.28 to 1; however, age class composition varied over the course of each season. Immatures comprised a greater proportion of the eagle population during the early and late parts of the season.

The daily activities of eagles included foraging and eating, flying, loafing and night-roosting. Eagles typically used different portions of the study area for each of these activities, especially when the eagle population was large. Habitat use data were obtained from 10,710 locations of perched eagles plotted on census forms. Ice cover, wind exposure, human activity and local food concentrations were the most important factors determining the daily use of suitable perching habitat. Eagle dispersion was most clumped when ice cover on the river was at a maximum, and most uniform when the river was ice-free.

Eagles use of foraging areas was greatest in the morning and diminished as the day progressed; however, when large numbers of eagles were present, eagles were observed foraging during all daylight hours. Use of loafing areas peaked in the middle of the day.

The prey base of eagles in the study area was dead or injured fish, primarily gizzard shad (*Dorosoma cepedianum*). Six behaviorally distinct foraging strategies were identified and are described. By far the most commonly used, and the most intensively studied of these was Strategy 1, an aerial search, swoop and capture of prey. Eagles fishing via this method were successful approximately 70% of the time and averaged less than 5 minutes of flight time per fish captured. Adults were significantly more successful in capturing fish and averaged shorter flight duration per fish captured than immatures. Approximately 70% of the fish captured were small (15 cm. or less) and the size of fish taken was similar for both age classes. Over 97% of small fish captured by eagles were successfully consumed. Most small fish (71.0%, N= 1181) were consumed in flight. Nearly 37% of large fish (greater than 15 cm) captured by eagles were lost (pirated or accidentally dropped) prior to being consumed. Most large fish (51.5%, N= 504) were eaten at tree perches.

Eagles readily attempted to steal prey from other fish predators, even though food was generally abundant. Eagles attempting interspecific piracy were relatively more successful (55.4%, N= 65) than eagles attempting intraspecific piracy (14.3%, N = 154). Eagles carrying large fish were more vulnerable to piracy, and were more likely to be attacked than were eagles carrying small fish. Intraspecific piracy increased in frequency as foraging eagles became more concentrated. Foraging eagles exhibited many behaviors designed to prevent the loss of procured prey to other eagles. These pirate avoidance and pirate defense strategies are discussed. — **Fischer, David Lawrence. 1982. M.S. Thesis. Western Illinois University, Macomb.**

## Ecology of Bald Eagles Wintering in Southern Illinois

The population size, food habitats, distribution, and habitat of wintering Bald Eagles (*Haliaeetus leucocephalus*) were investigated in Illinois at Union County and Horseshoe Lake conservation areas during 1979-1981. Crab Orchard National Wildlife Refuge was examined also during 1980-1981.

Eagles arrived in southern Illinois during late October with estimated peak populations of 180-200 occurring, dependent upon weather conditions, in January and February; eagles departed by early March. Immature eagles predominated in wintering populations, but adult and immature subpopulations displayed similar patterns of fluctuations in numbers. Morning and evening roost counts provided an accurate estimate of total population size and automobile transact counts provided data on eagle distribution and habitat utilization patterns.

Diurnal perch sites near shallow water areas were utilized most during early winter. Occurrence of ice cover caused eagles to shift to areas of open water where waterfowl also concentrated. Canada Goose (*Branta canadensis*) carcasses appeared to be the principal food at this time, though unsuccessful eagle attacks were witnessed on injured or dying waterfowl. During late winter, eagles appeared less reliant on refuges for feeding. This may have been associated with spring migration.

Food availability was considered the major influence on the selection of diurnal perch sites. Protection from winds and insulation from human disturbance appeared to be of secondary importance. Communal roosts offered shelter from prevailing winds by surrounding vegetation and were associated with standing water. Most eagles left the roost by sunrise and returned by 20 min after sunset. Times of vocalization and movement were similar to those of entrance and departure. — **Sabine, Neil. 1981. M.S. Thesis, Southern Illinois University, Carbondale.**